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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/882,534	06/14/2001	Garo J. Derderian	MI22-1752	8714

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EXAMINER

THOMAS, TONIAE M

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 02/19/2002

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

pplicant(s)

09/882,534

DERDERIAN ET AL.

Examiner

Art Unit

Toniae M Thomas

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 32-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 32-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. This action is a first Office action on the merits of Application 09/882,534 filed 14 June 2001, which is a divisional of Application 09/652,532 filed 31 August 2000. The preliminary amendment received on 14 June 2001 canceled claims 1-31. Currently, claims 32-39 are pending.

Claim Objections

2. Claims 33-35 and 37-39 are objected to because of the following informalities: the phrase "the method" should be changed to "the capacitor construction" (claims 33-35 and 37-39, all occurrences). Claims 33-35 depend from claim 32, which is a product claim. Likewise, claims 37-39 depend from claim 36, which is also a product claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 32-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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The claim language "the barrier layer" lacks antecedent basis (claim 32, line 2).

Antecedent basis for the claim language "the barrier layer" is unclear (claims 33, 34, 35). It is not clear which barrier layer the phrase "the barrier layer" is referring to: "the barrier layer" (claim 32, line 2), or "an atomic layer deposited insulative barrier layer" (claim 32, lines 3-4).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4. *Claims 36-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Park et al. (US 6,144,060 B1).*

Park et al. disclose a capacitor construction (e.g. see figs. 5-7 and accompanying text). The capacitor construction comprises: a first capacitor electrode 114 116 over a substrate 100 (fig. 5); an insulative barrier layer 122 to oxygen diffusion over the first electrode (fig. 6), the barrier layer comprising a chemisorption product of first and second precursor layers (col. 6, lines 32-51); a capacitor dielectric layer 118 over the

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first electrode (fig. 5); and a second capacitor electrode 120 over the dielectric layer (fig. 5).

The barrier layer comprises Al_2O_3 . The barrier layer exhibits a K factor of greater than about 7 at 20°C.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. *Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al.*

Park et al. do not teach that the barrier layer has a thickness of less than 12 Å. However, "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation" (*In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)). Therefore, the thickness of the barrier layer is taken to obvious over Park et al.

6. *Claims 32-33, and 35 are rejected under 35 U.S.C. 103(a) as being obvious over Agarwal (US 6,218,256 B1)¹.*

¹ Applicant submitted the Agarwal patent as prior art. See copy of 1449 attached hereto.

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The applied reference has a common Assignee with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

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Agarwal discloses a capacitor construction comprising: a first capacitor electrode 12 over a substrate 10 (fig. 7), a capacitor dielectric layer 14 (fig. 7), a second capacitor electrode 18 over the dielectric layer (fig. 7), and an insulative barrier layer 16 to oxygen diffusion between the first and second electrodes (fig. 7).

The barrier layer has a thickness of less than 12 Å (col. 5, lines 27-35).

The barrier layer exhibits a K factor of greater than about 7 at 20°C.

Agarwal does not teach that the insulative barrier layer is an atomic layer deposited insulative barrier layer. However, the examiner takes official notice that atomic layer deposited insulative layers are known in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toniae M Thomas whose telephone number is (703) 305-7646. The examiner can normally be reached on Monday through Thursday 8:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead can be reached on (703) 308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JMJ

February 11, 2002

Carl Whitehead, Jr.
CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800